

STAKEHOLDERS' INTERFACE ON GM FOOD CROPS¹

PREAMBLE:

The Asia-Pacific Consortium on Agricultural Biotechnology (APCoAB) and Trust for Advancement of Agricultural Sciences (TAAS) organized a “Stakeholders’ Interface on GM Food Crops” on 19 May 2011 at National Agricultural Science Complex, New Delhi to deliberate on issues related to adoption of GM food crops in India. The event was co-sponsored by the Indian Council of Agricultural Research (ICAR). The day long event was held in the background of ongoing controversy surrounding the moratorium imposed by the Ministry for Environment on the release of Bt brinjal, that has sparked a debate on future of GM food crops in India.

The meeting was attended by 45 participants representing a wide cross section of stakeholders including policy makers, technical experts on biotechnology and biosafety, agricultural scientists, representatives of seed sector, NGOs and the farmers. Dr. M. K. Bhan, Secretary, DBT; Dr. S. Ayyappan, Secretary, DARE and DG, ICAR; Dr. R. S. Paroda, Former Secretary, DARE and DG, ICAR, Dr. Manju Sharma, Former Secretary, DBT and Dr. R.B. Singh, President, National Academy of Agricultural Sciences (NAAS) were among those present. Besides, opinions on the subject were also received from Dr. M. S. Swaminathan and Dr. G. Padmanaban and the same were circulated in the meeting, since they were unable to attend.

The technical program started with key note presentations on national and regional agricultural biotechnology and biosafety status and future needs, followed by panel discussion which focused on four key issues: (i) Is GM technology necessary for Indian Agriculture? (ii) Is the present biosafety regulatory system adequate? (iii) How to address public concerns on GM food crops? and (iv) How to ensure public private partnership for promoting GM crops? The highlight of the meeting was active participation of a diverse range of stakeholders involved in development, commercialization and cultivation of GM crops in the discussion. Farmers having first hand experience of cultivating Bt cotton, the only GM crop grown in India, narrated their positive experiences.

¹**Organized jointly by:** The Asia-Pacific Consortium on Agricultural Biotechnology (APCoAB) and the Trust for Advancement of Agricultural Sciences (TAAS) at National Agricultural Science Centre (NASC) Complex, New Delhi on 19 May, 2011.

PERSPECTIVE:

Despite Green Revolution and several recent innovations, the challenge of food and nutrition security still looms large. India's population now stands at 1.21 billion and is increasing by about 15 million each year. By 2020, we would need to increase our food grain production from the current level of 235 million tonnes to around 285 million tonnes. It means that we shall have to ensure an annual increase of 5 million tonnes per year. Moreover, India currently faces the biggest challenge of poverty and nutrition security. Around 250 million people are below poverty line, who do not have economic access to food. In the whole world, India has the maximum number of malnourished children below 5 years of age. In this context, the National Advisory Council is currently drafting a Food Security Bill to ensure an easy access to food and nutrition for all the children recognizing the principle that food is a fundamental right of every individual in free India.

In order to achieve future targets as well as the second Green Revolution, we need not only meet the challenges of increasing threats on account of biotic and abiotic stresses but also we have to address the concerns of declining natural resources (soil, water, genetic resources, energy, etc.) as well as emerging threats on account of global climate change.

Obviously, we would require a paradigm shift towards twin pillar approach, which balances Genetic Resource Management (GRM) on one side and the Natural Resource Management (NRM) on the other. We shall have to move vertical and adopt new science (biotechnology, ICT, nanotechnology, GIS, etc.) for new innovations that can lead to bigger impact in reducing poverty, enhanced nutritional security and better environmental sustainability. Poverty of small holder farmers can only be overcome by providing them new technologies that can reduce cost on inputs, build resilience in farming and increase their income by linking to market. In this context, we do see a prominent role of biotechnology, which needs to be highlighted in the present context.

Recent developments globally have demonstrated that biotechnology in agriculture will play a key role in meeting the current challenges. In India, our own experience with Bt cotton, during the last one decade, clearly reflects the great potential of biotechnology in benefiting the small holder farmers throughout the country. Impact of this fiber revolution (which in no way is less than the Green Revolution) dispels all doubts about the potential of agricultural biotechnology. Similar achievements have been witnessed in case of GM food crops like corn, soybean and canola in other countries such as Argentina, Australia, Brazil, Canada, Philippines, South Africa, U.S.A. etc. Relevance

of GM technology for Indian agriculture is much more in the present context since farmers need technologies that can save cost on their inputs and are also environmentally safe while ensuring faster production growth to meet ever increasing demands for food and nutrition. Biotechnology will play a key role in our nutrition security, especially through designer crops and biofortification through genetic enhancement. In nutshell, we need targeted approach for new genes for new products and new traits.

The first Green Revolution was successful because of scientific breakthrough, policy support and faster adoption of technologies by Indian farmers. Second Green Revolution would obviously require similar holy alliance without which it will be impossible to achieve it. Enabling environment, policy support, public private partnership and needed faith and confidence in both science and scientific community are all important cradles to move forward. Current unfortunate trend to have perception other than facts is rather proving counter productive. It has demoralizing effect on agricultural biotechnologists in India, which indeed is a dangerous trend. It appears that second Green Revolution is presently at Cross Roads, since scientific accomplishments, public-private-partnership in research and genuine efforts to outscale innovations for helping the resource poor farmers are being seen for the first time with suspicion. Both public and policy support, that enabled us achieve faster growth in the past, seem to be dwindling. Obviously, business as usual will not work. Concerns, if any, for biosafety and biosecurity, will have to be addressed with a clear and strong commitment in a given time frame to move forward in a Mission Mode. It is ironical that on one side we are testing and releasing pesticides on a regular basis and on the other we can not release biotech products.

The stakeholders attending the meeting strongly felt that we must not miss this opportunity and must not let misconceptions prevail in the interest of our farmers, as well as our country. It was general consensus in the meeting that we should adopt a proactive approach to correct the wrong perceptions in the minds of both the public and policy makers. Finally, the stakeholders felt convinced that there is a need to build the same confidence and establish the same holy alliance that had led us to achieve the first Green Revolution in mid-sixties or else our dream for the second Green Revolution will never be realized. Hence, let us not let our dream shatter. The participants felt that the stakeholders must rise and let their views known rather than being on receiving end. Let there be an extensive debate on pros and cons and the genuine concerns, if any, be debated. At the same time, let us express our views boldly to change the mind set of those who seem to have been wrongly informed and thus lost faith in both science and scientific community.

We, therefore, resolve to adopt the following recommendations emerging from this interface on GM food crops and urge to take immediate action for their speedy implementation in the best interest of our resource poor farmers.

RECOMMENDATIONS:

1. The second Green Revolution is needed in India especially for our nutrition security, since India has the maximum concentration of malnourished children and anemic pregnant women in the world. We also need good nutrition now than food alone. For this, the use of GM technology is highly relevant in the present context. This technology offers new options to enhance nutrition security through designer crops and to meet the challenges of biotic and abiotic stresses as well as those of global climate change. Moreover, the poverty of small holder farmers can be overcome by providing them new technologies that can reduce cost on inputs, build resilience in farming and increase their income by linking to the markets. In this context, we do see a prominent role of biotechnology, which needs to be harnessed on priority.
2. Development and adoption of appropriate GM technologies would need a Mission Mode approach for which a strong public research system needs to be built / strengthened. Along with public sector, the private sector investments on GM technologies have to be enhanced for which an enabling environment is a must.
3. There is an urgency now for the prioritization of crops in order to effectively use GM technologies for improving specific traits. To achieve this, a National Mission on GM food crops be initiated soon, being a national priority, jointly by DBT and ICAR. It should be a time targeted and well monitored program linked to specific outputs.
4. It was strongly felt that the Biotechnology Regulatory Authority of India (BRAI) Bill, which is already with the Parliament, must be cleared soon and a strong message in this regard needs to be sent to all concerned policy makers and authorities since we have already lost valuable five years. The proposed BRAI is also recommended in order to ensure a single window system for testing, clearance and monitoring. At the same time, the regulatory system should not be too stringent to slow down the release process.
5. The biosafety regulatory system, though well defined and in place, needs to be made more efficient and fool proof so as to facilitate effective and safe application of biotechnology. We need a clear and well defined pathway and transparent system for which there is an urgent need to establish a few accredited laboratories

in reputed public sector institutions like NIN, IARI, CDRI, etc. having excellent infrastructure with modern equipments and well trained staff. Accreditation of some of these public sector laboratories is a must in order to build much needed public confidence. Also a referral laboratory needs to be established so as to deal with any dispute arising on account of variations in results of different laboratories. There is no mechanism existing presently for the seed testing of GM crops. Hence, efforts are needed to establish accredited laboratories for this purpose.

6. There is also an urgency to have proper post-release monitoring system, for which a suitable mechanism be put in place jointly by ICAR and DBT. Also, need for undertaking survey on farmers' fields is justified in order to assess the uptake and impact of GM technologies. Socio-economic assessment should be an integral part of GM crops evaluation process. Also, opportunity costs of not adopting the technology should be a part of this assessment.
7. Plant breeders and biotechnologists must join hands and work as one team to address specific research problems. Their efforts should be synergistic and not competitive. Similarly, strong public-private-partnership right from the beginning of the project, with needed understanding, mutual trust and defined roles for research and benefit sharing, be encouraged through enabling environment. This is a must for faster delivery to the end users of agricultural biotechnology.
8. Public perceptions about GM technology are often not based on scientific facts. Information communication system, including public extension and awareness services, need to be considerably improved in order to effectively deliver correct and unbiased information to farmers and the general public. Also, there is an urgent need to properly inform and educate people at all levels, including policy makers and planners, farmers, consumers and other stakeholders on all aspects of agricultural biotechnology and biosafety. Required communication tools must be used for effective delivery of knowledge.
9. Priority investments are needed on capacity building, especially in areas of biosafety research, regulatory systems (including legal aspects), communication tools and IPR issues since they are all critical for outscaling innovations for greater impact.
10. There must be a defined focus on agri-business and agri-biotechnology in the 12th Five Year Plan for which ICAR should take a major initiative and DBT must extend required funding support. Agri-business Platforms and Technology Parks have to be established for building much needed public-private-partnership and for faster delivery of GM products to both the farmers and consumers.
